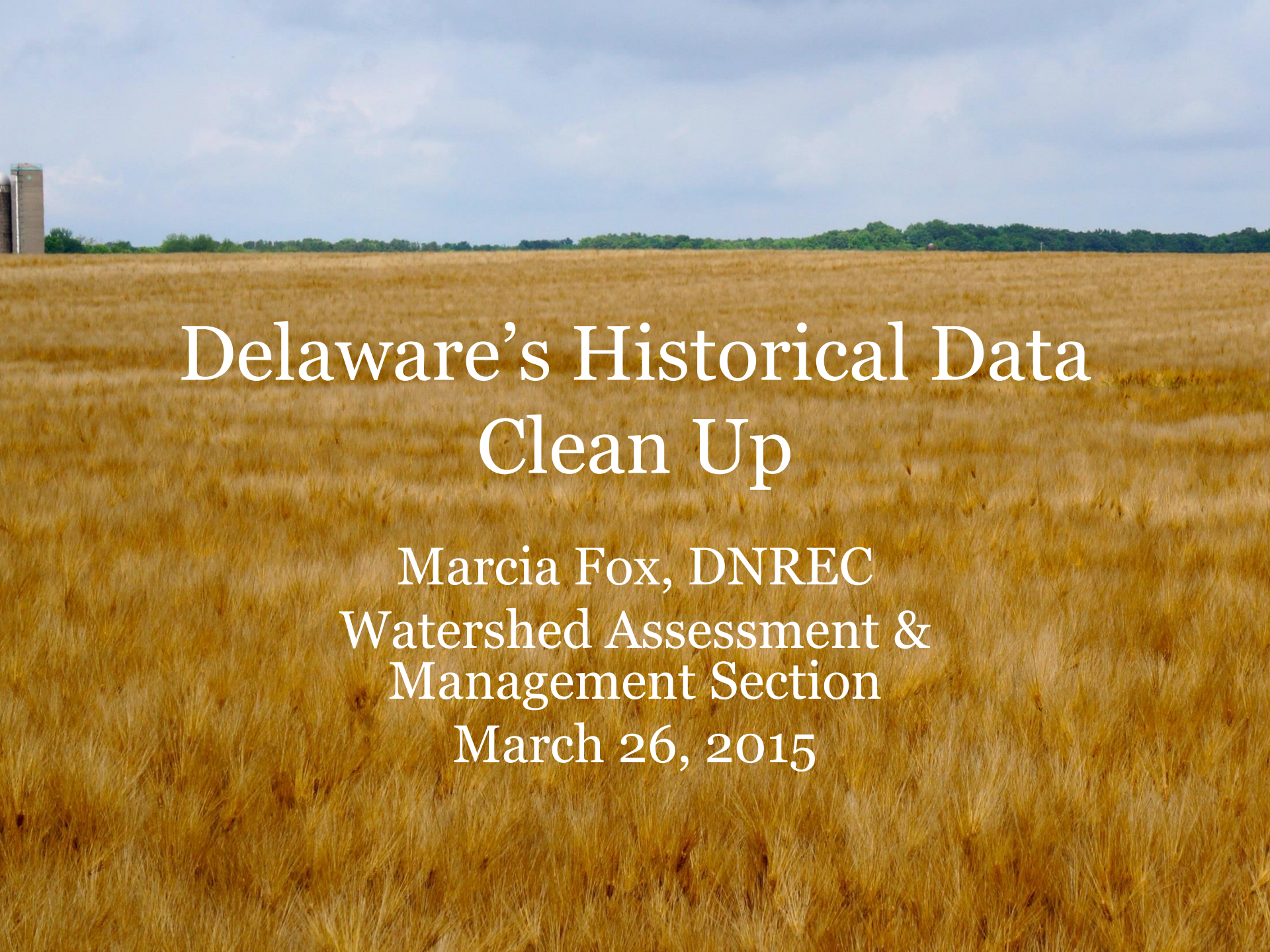

Delaware's Historical Data Clean Up

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Why it's important

- As part of the Model Recalibration and the 2017 Midpoint Assessment, jurisdictions are expected to "clean up" the information on BMP information and wastewater treatment plant discharges.
- Much of the BMP record was a carry-over from the Phase 4.3 Watershed Model which ended with year 2009
- Historical data can include voluntary practices if substantiated through protocols
- Assume records in recent history are more accurate than early years

Why it's Important?

- Accurate data is integral to:
  - Calibrating Phase 6 Model
  - Planning and Reporting Future Actions
  - Using Monitoring Data to Assess the Impacts of Past Efforts
  - Assessing the Critical Period

What Needs to be Completed?

- Cleanup 1985- present
- Estimate implementation prior to 2000 if quality implementation data is not available
- Focus on collecting data for practices implemented from 2000 through the present (WQGIT Oct 2014).
- Deadlines
  - Draft data to be submitted through June 30, 2015
  - Final, quality assured data by September 30, 2015

What Needs to be Completed?

- Most important are “biggest hitters”
  - Model needs all BMP inputs, but those that make biggest pollutant reductions will have the biggest influences
  - Big hitters will vary by jurisdiction –the “watermelon charts” may provide guidance for history clean-up priorities
  - Place emphasis on cleaning up a subset of practices with high implementation levels and/or practices in specific geographic areas.
- Provide documentation explaining methods for estimating 1985 – 1999 implementation levels.

Chesapeake Bay Watershed Model
Agricultural Practice Groups

Nutrient Management

- Nutrient Management
- Decision Agriculture
- Enhanced Nutrient Management

Conservation Tillage

- Continuous No-Till
- Other Conservation Tillage

Cover Crops

- Cover Crops and Commodity Cover Crops
  - Early, standard, late-planting
  - Species
  - Seeding method

Pasture Grazing Practices

- Alternative Watering Facilities
- Stream Access Control with Fencing
- Prescribed Grazing
- Precision Intensive Rotational Grazing
- Horse Pasture Management

Other Agricultural Practices

- Forest Buffers
- Wetland Restoration
- Land Retirement
- Grass Buffers
- Tree Planting
- Carbon Sequestration/Alternative Crops
- Conservation Plans/SCWQP
- Animal Waste Management Systems
- Barnyard Runoff Control
- Mortality Composters
- Manure Transport
- Water Control Structures
- Non-Urban Stream Restoration
- Poultry and Swine Phytase
- Dairy Precision Feeding and/or Forage Management
- Ammonia Emissions Reductions

Chesapeake Bay Watershed Model
Practices on Developed Lands

Stormwater Management

- Wet Ponds and Wetlands
- Dry Detention Ponds and Hydrodynamic Structures
- Dry Extended Detention Ponds
- Infiltration Practices
- Filtering Practices
- (Urban Stormwater Retrofit)
- (New State Stormwater Performance Standards)

Septic BMPs

- Septic Connections
- Septic Denitrification
- Septic Pumping

Other Urban/Suburban Practices

- Forest Conservation
- Impervious Surface and Urban Growth Reduction
- Forest Buffers
- Tree Planting
- Grass Buffers
- Stream Restoration
- Erosion and Sediment Control
- Nutrient Management
- Street Sweeping
- Abandoned Mine Reclamation
- Dirt and Gravel Road Erosion and Sediment Controls
- Shoreline Erosion Control

What types of BMPs have we focused on?

Delaware's Historical BMP Data: document for summarizing the state's approach to cleaning up historical BMP data for the 2017 Phase 6 Watershed Model calibration.

URBAN BMPs

Stormwater BMPs: Stormwater BMP data comes from several sources.

1. Mudtracker Database – Stormwater practices installed on projects permitted by DNREC Kent and Sussex Conservation Districts are tracked using the Mudtracker database. Wh extracted for the first NEIEN submission, it became apparent that the install date was a filled with the date the projects were input into the new database rather than the actu As a solution, of determining the exact date of installation and clean up this data record choose one of the following options:
    a. Determine project installation dates based on close-out letters from developer
    b. Evaluating aerial photography by segregating into 5 year blocks (2002, 2007, 20

To accomplish the above, would require researching archived documentation or evaluating photographs using contractual or seasonal help at an estimated time of 3 months.

Inspection databases are maintained by the Conservation Districts and MS4 permitees. The visually inspect BMPs and determine if practices are adequately maintained and operating. work with the agencies to obtain inspection record information (such as date last inspected verification purposes) and add any additional database fields that will help with acquiring a maintaining model credit.

2. DelDOT - Delaware's Department of Transportation (DelDOT) has all the necessary info historic BMP back to 1987. This information includes size, maintenance inspections, an treated. DelDOT's contractor, KCI, conducts inspections and maintains data for their st BMPs.
3. Town of Middletown – work is already underway to improve tracking and reporting of p from this delegated agency.
4. New Castle County – acres treated is missing from previous submissions. This field is no populated and the County is investigating potential GIS approaches using elevation/LID calculate these areas.

Urban Nutrient Management: The Delaware Department of Agriculture (DDA) has reporte practice once in the past. Conservation Districts may also have data on cost-shared nutrien management planning for urban areas; however, it has never been submitted before. The Nutrient Management Panel has developed a report outlining the UNM protocol. Once app DNREC will work with DDA to implement protocols to transition to using non-farm fertilizer

Street Sweeping: Delaware has not reported this practice in the past. We are currently wo Tetra Tech to develop a template for towns to report this practice. DelDOT has records of s sweeping in New Castle and Kent Counties for high volume roads, secondary roads, and sub

with weight of materials collected at watershed scale. This information is infrequent for Sussex County but data will be streamlined in 2013 by using GPS receivers for all counties. Historic records will not likely be provided.

WASTEWATER

Large Systems: One of our priorities for 2017 is to work with CBPO to incorporate Delaware's large systems in to the model. Many of these systems already utilize and will be required by regulations under revision to utilize advanced treatment.

On-Site: All historic records have been digitized in GIS format. Database clean-up is needed.

The following options will be explored to receive additional data and inspection

1. Pump-outs: can ge information from Class H inspectors and/or sewer much wastewater treatment plants accepted). New regulations will rec will be able to determine at watershed scale. Obtaining historic inform is considered low priority.
2. Denitrification/Advanced Treatment: all in records. Monitoring and ma will be required for new systems (2 yrs). Additionally, the new regulatic with property sale.
3. Sewer Connection: greatest potential for cleaning up data. Sussex Cou system in September. Currently, in process of getting data at County le info on connections (ie. #units/year).

AGRICULTURAL BMPs

Most of Delaware's agricultural BMPs and NRCS implemented cost-share practi the 1990s. Delaware's verification efforts are in development and will aid in his

NRCS Cost Shared Practices

Delaware will continue to use the USGS data approach in a consistent format gc possible and will supplement using information from DDA and Conservation Dis

Delaware Department of Agriculture

1. **Forestry:** Forestry database goes back to 2005 for planting and timber information, would require researching archived documentation or eva photographs using contractual or seasonal help at an estimated time of
2. **Manure Relocation:** This data set may not need clean up. Reporting re changed as we have historically reported at HUC scale but model uses d model recalibration require us to resubmit past data at County scale or accepted? Our preference is HUC scale.
3. **Nutrient Management Plans:** Historic data is infrequent. CBP has given us credit based on Delaware's Nutrient Management Law. Delaware is waiting for outcomes of nutrient management panel to provide new definitions and model characterization of decision and/or enhanced nutrient management. Delaware will then assess if we should be reporting our implementation at one of these levels.

Conservation Districts

1. **Cover Crops:** Districts may not have record prior to 2000. All crops are inspected annually by a conservation district planner. Some districts keep separate databases from NRCS. DNREC will need to work closely with Districts to add fields to databases for model credit and bmp verification.
2. **Water Control Structures:** DNREC has begun a GIS analysis and will provide historic data by date provided.
3. **Irrigation:** At present, we have determined the total acres that have overhead (pivot) irrigation using an aerial reconnaissance approach up through July 2010. To determine how acreage under irrigation increased over time, we may need to do a similar analysis using older aerial photos. We also need to determine a simplified approach for adding new irrigation in the future – possibly working with DNREC well and water allocation permitting staff, DRIP program, and NRCS.

RESTORATION BMPs

DNREC has developed a restoration database for non-cost shared projects with entries back to 1986. The database is difficult to maintain as not every BMP has been discovered and no updates have been made since December 2011. Delaware's Chesapeake Bay Restoration Subcommittee will be meeting to discuss efficient ways of maintaining the database and incorporating fields that will help with receiving model credit by December 1, 2013. To gather all information needed for this 2013 submission will require using contractual or seasonal help at an estimated time of 3 months.

What types of BMPs have we focused on?

- Forest Harvesting Management
- Manure sheds
- Wetland restoration
- Stream restoration
- Tree planting
- Conservation Tillage
- Cover Crops
- Water Control Structures
- Septic Connections
- Public Land Restoration Practices
- Land retirement
- Irrigation

Example - Method of Clean-up and Verification

- Cropland Roadside Transect Survey
  - Conservation Tillage
  - High Residue Minimum Soil Disturbance
  - Collect unaccounted for Cover Crops

Adoption of Study and Goals

- Creation of consistent source of data for tillage practices
  - Source of a substantial portion of our load reductions in WIP Include the incorporation of HRMSD practice for further reductions
- Collect unaccounted cover crop data
    - Traditional vs. Commodity
    - Cost shared vs. Non-cost shared

Establishing a Statistically Valid **Transect Procedure**

- 110 miles along predominately cropland
- After majority of main crops planted, but before crop canopy closes
- “Windshield Observations”
- 2 Teams – Observation & QA/QC Team
- 460 cropland observations
- Stops at specified intervals (.2-.5 miles) and observe both sides of road

New Castle County
- 133 miles
- 470 observations

Kent County
- 206 miles
- 504 observations

Sussex County
- 202 miles
- 497 observations

Results of the Transect Survey

- Determined a way of verifying annual practices
- Documented land use changes
- Reported new BMP – High Residue Minimum Soil Disturbance
  - 47,755 acres!
- Know that in some counties we're not accounting for at least 17% of cover crops (non cost shared)
  - More to come with this data!

Goal of Today's Meeting

- Familiarize everyone with BMP Verification and Historical Data Cleanup
- Break into Groups
  - Agriculture
  - Wastewater
  - Stormwater
  - Restoration
- Discuss path forward
  - Group members
  - Chairs
  - Future meetings


QUESTIONS?

Wrap Up

- Contact lists and notes from today's meeting will be emailed to respective sector groups by next week (Apr 6-10).
- Outlook invites will go out next week
  - Each group will meet twice between now and June
- Any data, information, etc. that the groups may need will be emailed next week.
- EPA will be hosting webinars. Webinar information will be forwarded.
- **Internal Deadline for Protocols– <u>May 29th</u>**